



Causes of off-flavour in lamb

“Key Customer Day” - 20 April 2018

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Causes of off-flavour in lamb

- Background
- Trials
- Analyses
- Results





Ram lamb?

- 1. Concern about ram lambs vs castrated male lambs**
- 2. Perception that ram meat is of a lower quality**
- 3. Ram lambs favoured in production**



AIM

To establish whether:

- 1. Off-odour/flavour is real**
- 2. What is causing it?**
- 3. Can any factors be used to minimise it?**

Compounds that contribute to off-flavour

Branched chain fatty acids (BCFAs)	4-Methyloctanoic acid
	4-Methylnonanoic acid
	4-Ethyloctanoic acid
Indoles	Indole Skatole
Phenols	p-Cresol 2-Isopropyl phenol 3,4-Dimethylphenol 3-Isopropyl phenol
Other compounds	Dimethyl disulphide 3-methylbutanoic acid

Analyses conducted

- Sensory Profiling Analysis
- Branched chain fatty acids
- GC-MS-O and Volatile Analysis
- Antioxidants
- Precursors
- Total Fatty acids



Trial A Experimental design

Farm	Diet	BSxSBx		Suffx		
		Ram	Cast	Ram	Cast	
Outdoor	Fresh Grass	6	6	6	6	24
Outdoor	Stubble Turnip	6	6	6	6	24
Outdoor	Forage Rape	6	6	6	6	24
Indoor	Conc	6	6	6	6	24
Indoor	Clover silage	6	6	6	6	24
Indoor	Grass Silage	6	6	6	6	24
		36	36	36	36	Total = 144

Total = 144 lambs



Trial B Experimental design

Farm	Diet	BSxSBx		SuffTex		
		Ram	Cast	Ram	Cast	
Outdoor	Fresh Grass	6	6	6	6	24
Outdoor	Stubble Turnip	6	6	6	6	24
Outdoor	Forage Rape	6	6	6	6	24
Indoor	Conc A	11	11	-	-	22
Indoor	Conc B	11	11	-	-	22
Indoor	Grass Silage	11	11	-	-	22
		51	51	18	18	Total =138

Total = 138 lambs



Sensory Profiling

- 8 trained panellists
- Meat well done
- Assessed sensory profiling attributes



Identify animals that score frequently highly for off-flavour/odour

8 Panellists: Use linescale differently

- Frequency of occurrence of off-flavour
- Mathematical formula used
- Individual animals identified



Off-flavour and odour attributes for Trial A & B

Piggy Aroma of Meat

Bloody Aroma of Fat

Farmyard Aroma of Meat

Metallic Flavour

Pungent Aroma of Meat

Bloody Flavour

Musty Aroma of Fat

Bloody
Aftertaste

Sulphurous Aroma of Meat

Chemical Aroma of Fat

Acidic Flavour

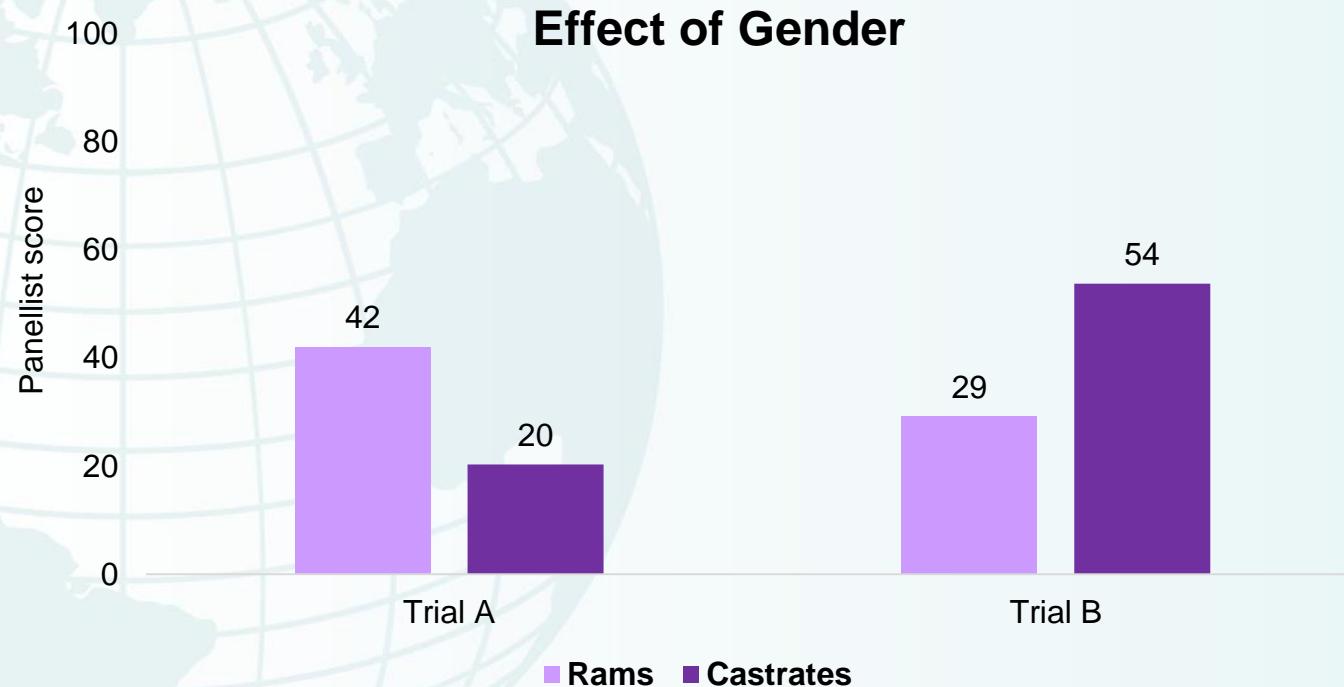
Sour Aroma of Fat

Rancid Flavour

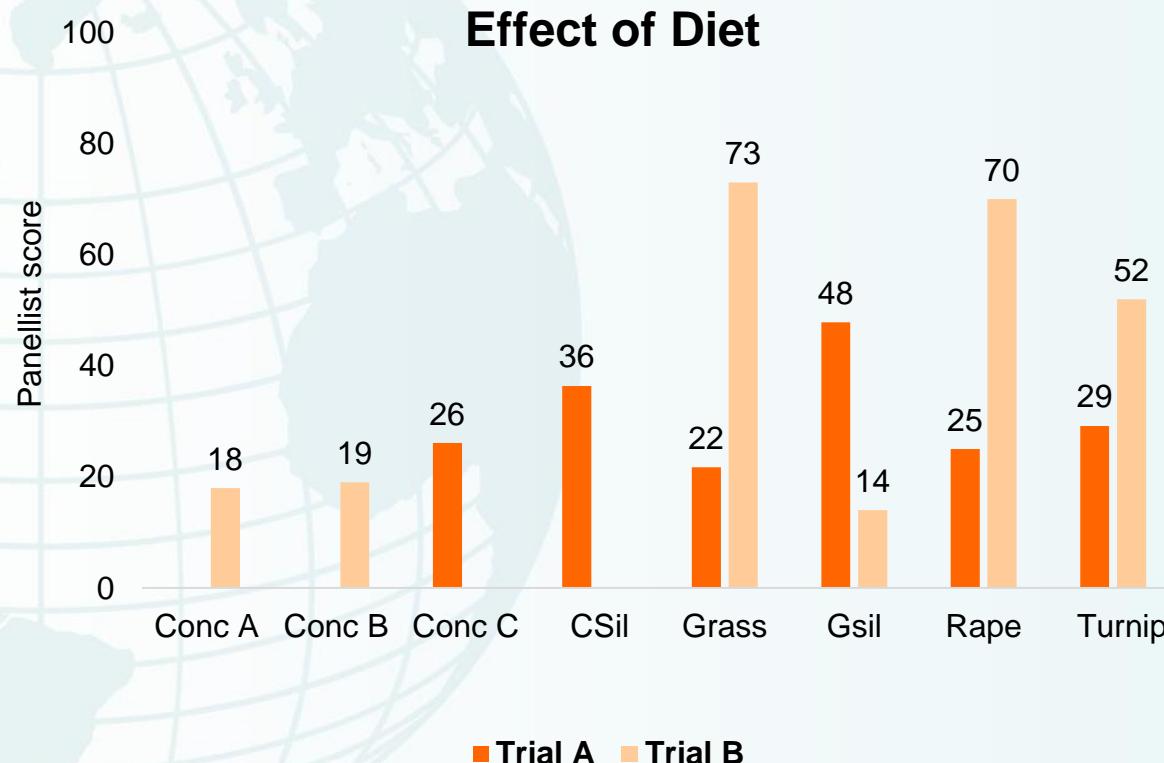
Lactic Aroma of Fat

Sour Aroma of Meat

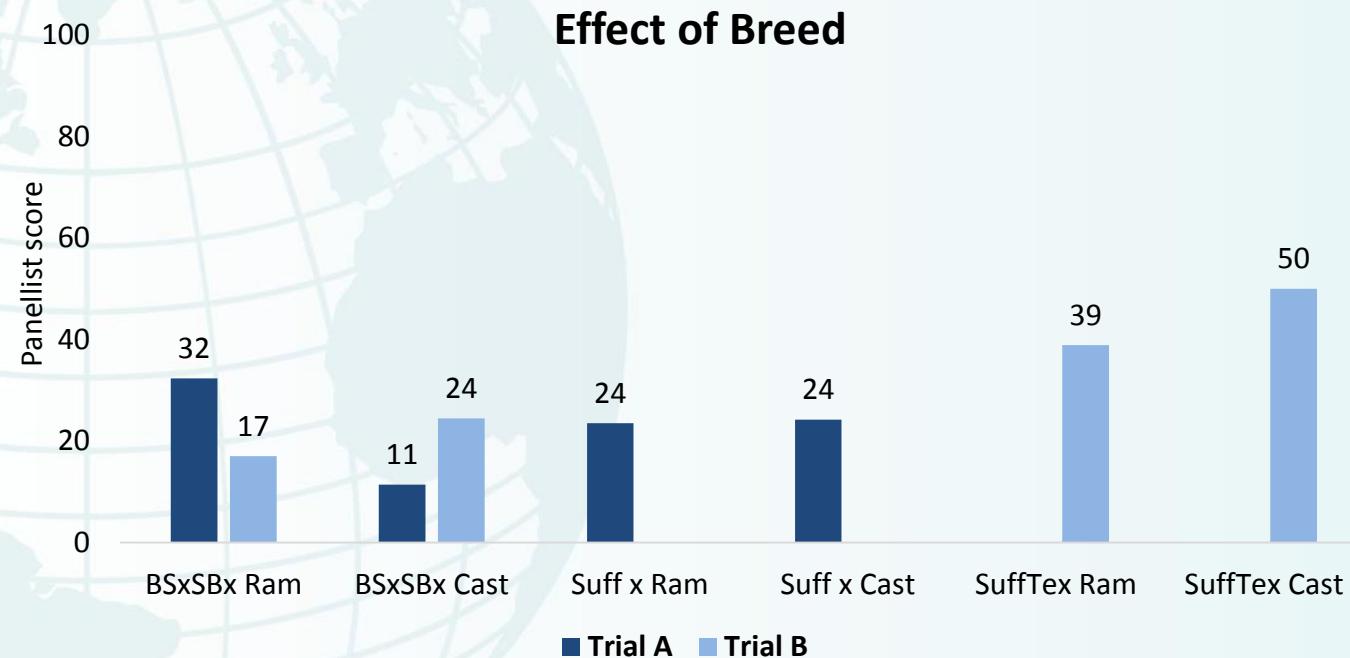
Identification of off-flavours & odours Trial A & B



Identification of off-flavours & odours Trial A & B



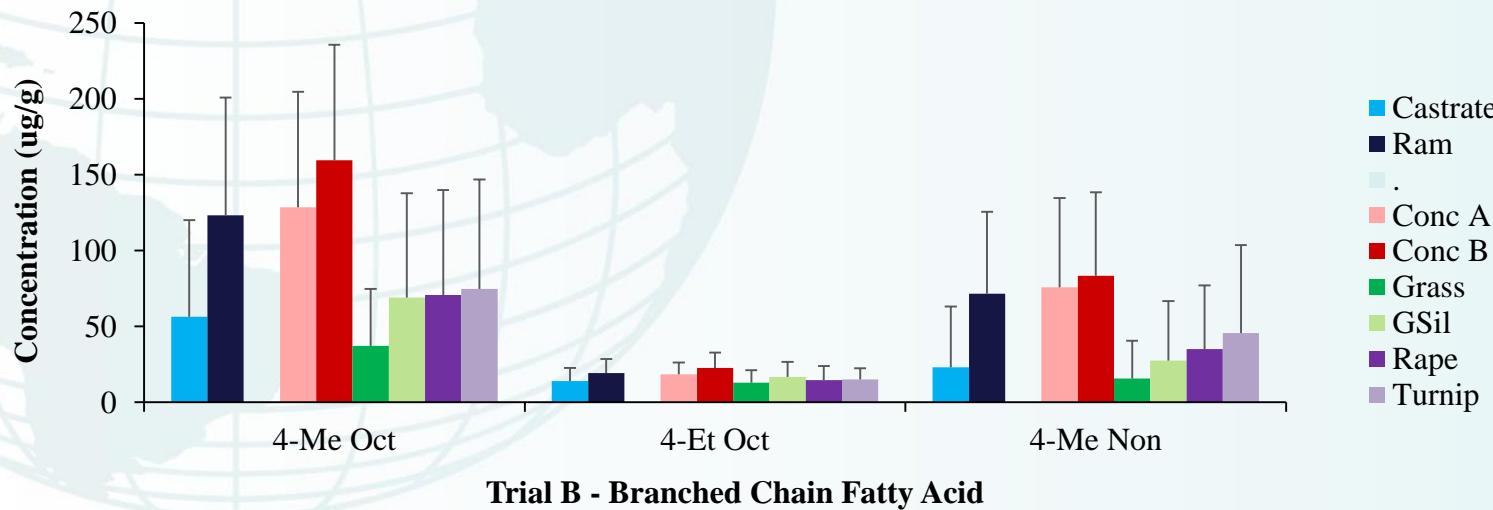
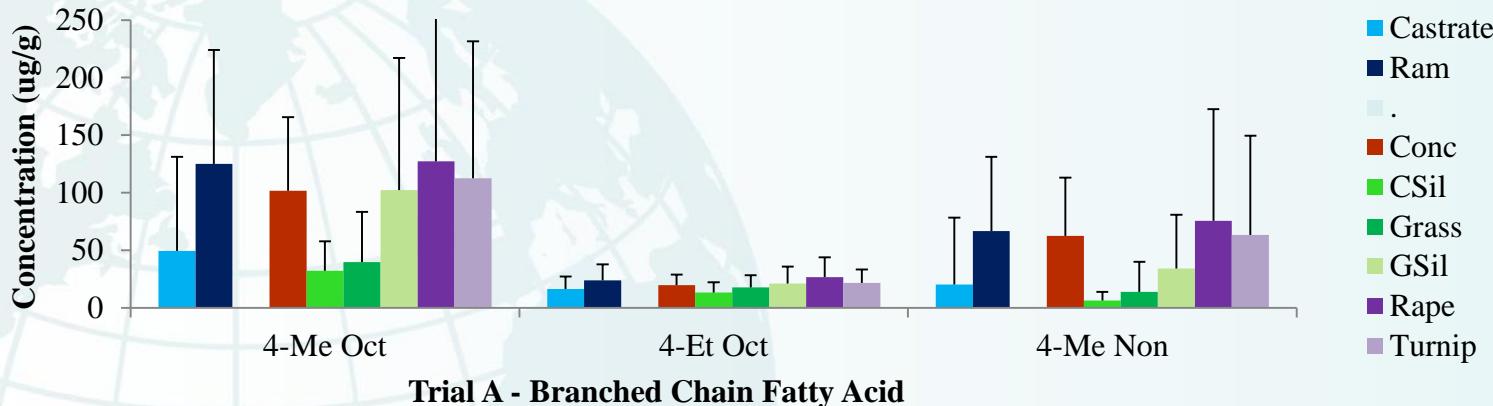
Identification of off-flavours & odours Trial A & B



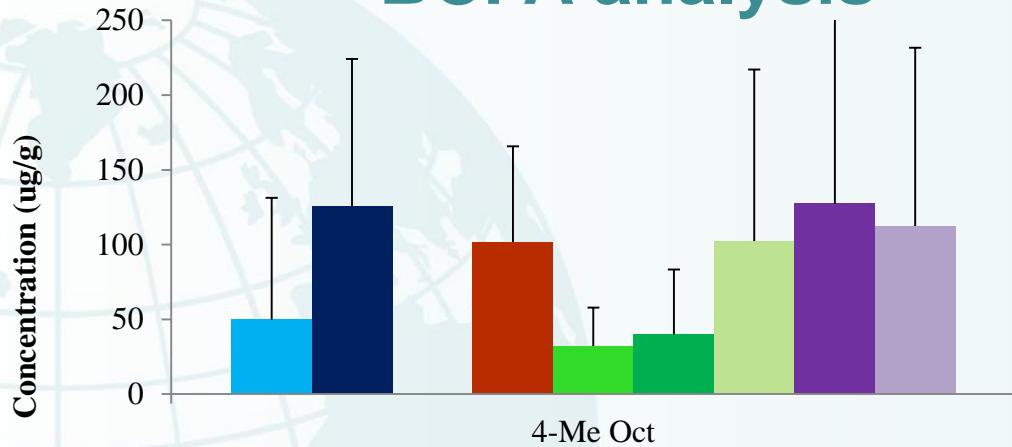
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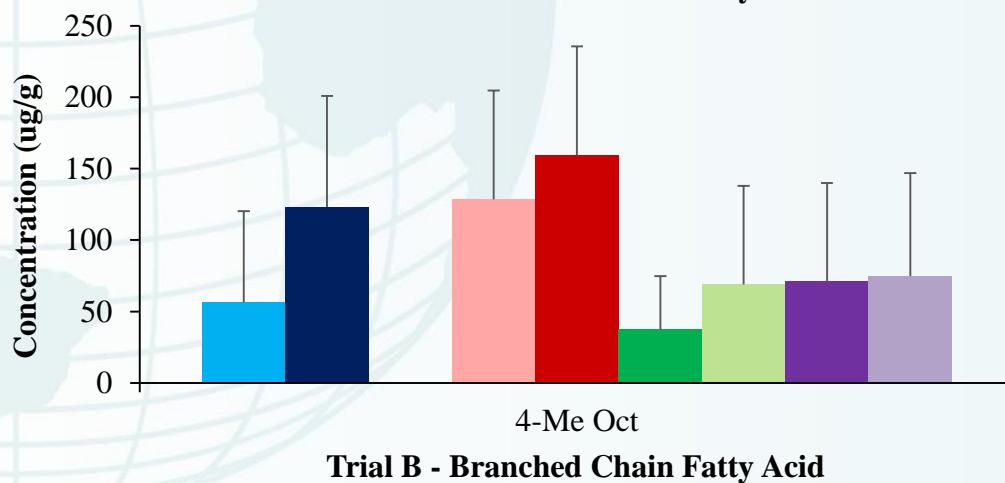
BCFA analysis



BCFA analysis

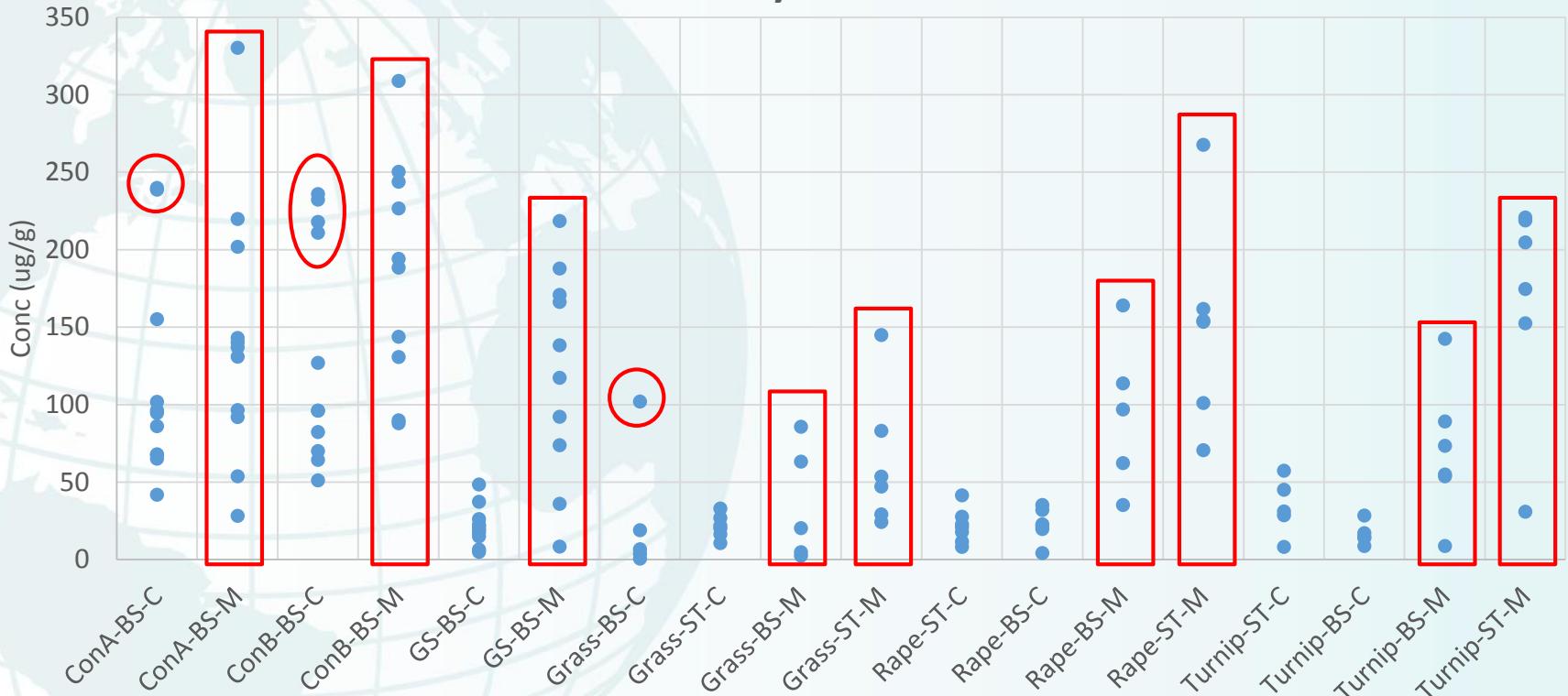


- Castrate
- Ram
- .
- Conc
- CSil
- Grass
- GSil
- Rape
- Turnip

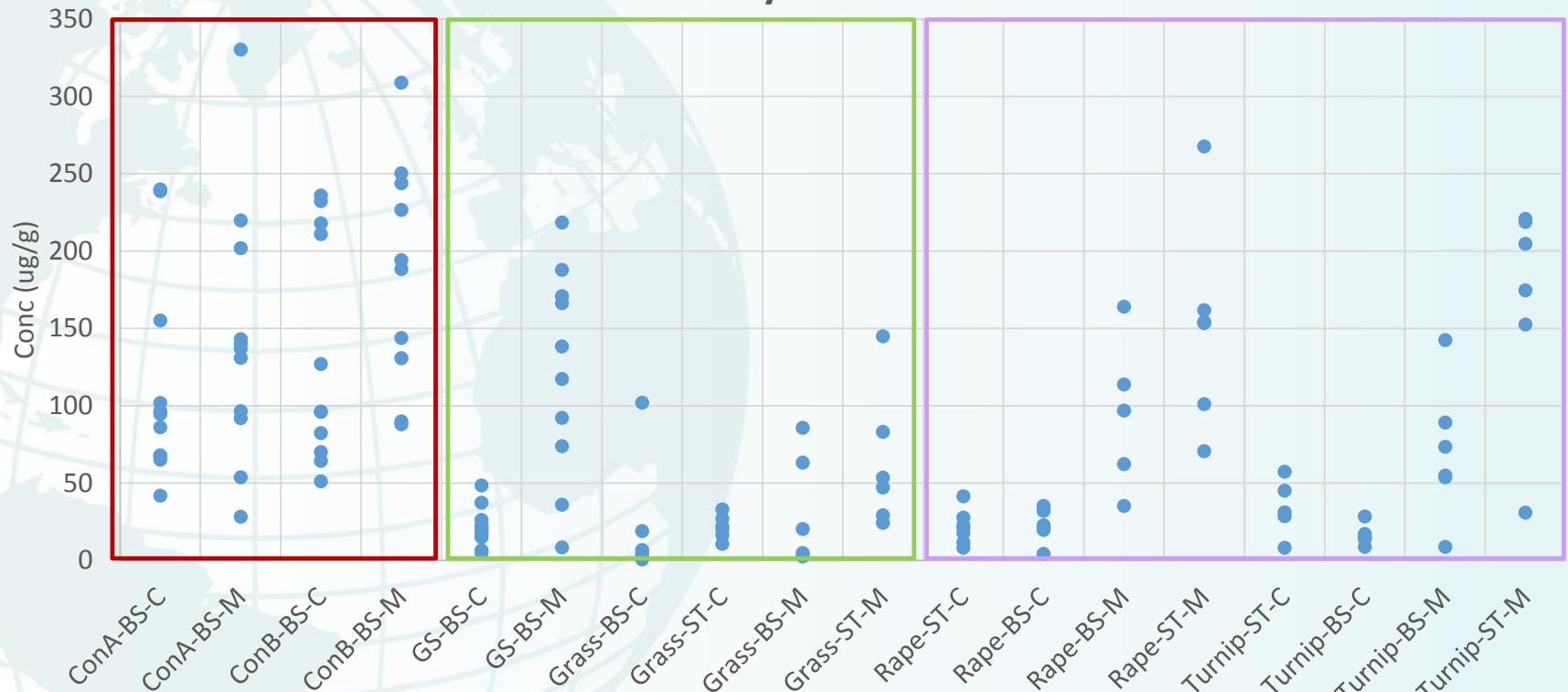


- Castrate
- Ram
- .
- Conc A
- Conc B
- Grass
- GSil
- Rape
- Turnip

Trial B 4-Methyloctanoic Acid



Trial B 4-Methyloctanoic Acid



Summary

- Individual animals score highly for off-flavours/odours
- Evidence suggests BCFAs not responsible for off-flavour in this case
- Work on-going to determine possible cause

Thank you for your time



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